Emission Testing Guideline

North Dakota Department of Health

A. **General**:

Emission testing is required to determine the types and amounts of air pollutants emitted by a variety of emission sources in the State of North Dakota. Information gathered from emission tests may be used for several purposes including: enforcing emission limits, issuing permits, evaluating pollution control systems, determining emission inventories, and assessing permit fees.

The purpose of this guideline is to set forth the requirements of a proper test plan and to ensure that test results yield data which are representative, consistent, and accurate relative to the tested source units.

B. **Emission Testing - Planning, Conducting and Reporting**:

The elements of a successful test program include the following:

1. Submittal of a proposed test plan.
2. Department review of the proposed plan.
3. Pretest meeting with the Department (if necessary).
4. Scheduling a Department representative to observe the testing.
5. Conducting testing and facility operations in accordance with the accepted test plan.
6. Submittal of a complete test report.

Acceptance of emission testing information by the Department is dependent on the source owner/operator following the requirements as outlined below. Each requirement should be studied carefully to avoid invalidation of the test by the Department.

1. **Submittal of a Proposed Test Plan** - A proposed emission test plan must be submitted for each source test at least thirty (30) calendar days in advance of the test unless otherwise specified by the Department or by rule (such as 40 CFR Part 63 which requires a 60-day notice). If this schedule cannot be met, contact the Department as soon as possible to work out an agreeable schedule. The source owner/operator should follow the format located in

Appendix A of this document when preparing a proposed test plan.

If the company makes any modifications or changes to the plan (including scheduling changes), the Department shall be notified at least five days prior to the test.

Prior to submitting the proposed test plan, the source owner/operator should give careful consideration to the items listed below.

a. Failure to give proper notification(s) may result in testing which can not be accepted as valid by the Department.

b. The Department generally requires that all testing be conducted in accordance with methodology promulgated by the Environmental Protection Agency (EPA) in the Code of Federal Regulations. The proposed test plan must clearly identify the proposed test method(s) and include detailed discussion concerning <u>any</u> deviations from the (EPA) reference methods or other approved procedures if such deviations exist.

c. If a New Source Performance Standard (NSPS) regulation is the basis of an emission limit, the company should check the specific regulation before choosing the test methods. Emission sources subject to NSPS must be tested in accordance with EPA methods, sampling times, volumes and other conditions specified by the regulation.

d. A Permit to Construct/Permit to Operate may include site-specific test methods and/or test procedures. The proposed test plan must follow all requirements of the applicable permit unless deviations are approved in advance by the Department.

e. National Emissions Standards for Hazardous Air Pollutants (NESHAP) contains specific requirements for testing. The standardized format included in this guideline does not specifically address some NESHAP requirements. The company must review the applicable standard and determine what sections and timelines apply. Any requirements of the NESHAP that pertain to actual performance tests must be

followed. The standard format may be used as a guide in setting up the specific NESHAP test plan.

2. **Department Review of the Proposed Plan** - Upon receipt of the proposed test plan, the Department will conduct a review for completeness and compliance with specific requirements in permits, regulations, etc. The company will be contacted no less than fifteen (15) days prior to the proposed test date if any problems are noted so that problems may be resolved prior to the test. The company may assume that no changes or modifications will be necessary if not so advised.

3. **Pretest Meeting with the Department** - A pretest meeting shall be held if requested by the Department or by the company. Submittal of a complete proposed test plan and use of test methodology in accordance with EPA reference methods generally alleviates the need for a pretest meeting unless special conditions exist.

4. **Scheduling a Department Representative to Observe Testing** - The Department must be given the opportunity to observe any emission testing in the State of North Dakota. The company must notify the Department of any changes in test methodology, test dates, or test times in accordance with requirements in this guideline. If the Department is unable to observe a test because of improper notification, the test results may be rejected.

5. **Conducting Testing and Facility Operations in Accordance with the Accepted Test Plan** - All testing and facility operations must be conducted in accordance with the accepted test plan. Any unforeseen changes due to such things as plant operations or weather must be discussed with the Department. Failure to conduct testing and/or source operations in accordance with the accepted test plan could be a basis for rejection of the test by the Department.

   Generally, testing must be conducted during operations where maximum emissions may be expected. Normally, this means that the testing must be conducted while operating at a level that is at least 90% of design capacity, or at least 90% of the maximum operating rate/level, whichever is greater.

   Failure to test at the appropriate operating rate, level, or conditions may result in additional restrictions being

placed on the source which could include derating the unit.

Testing procedures must directly follow those procedures published by the Environmental Protection Agency in the Code of Federal Regulations under 40 CFR Parts 51, 60, 61 and 63. Specific approval is necessary for test procedures which include deviations from EPA procedures or for alternative testing methods.

6. **Submittal of a Complete Test Report** - An emission test report must be submitted to the Department within sixty (60) days of completion of the test, unless otherwise approved by the Department. The report may incorporate, by reference, any material previously submitted to the Department which is part of the accepted Test Plan or in subsequent correspondence with the Department. The Department will review the report and notify the company of any problems. A suggested report format, including a listing of the minimum data requirements, is shown in Appendix B.

C. **Test Invalidation Criteria**:

An emission test must be determined to be valid by the Department prior to the acceptance of the test results. A test may be invalidated by the Department based on irregularities observed on-site or during the test report review.

The most common test invalidation criteria include, but are not limited to, the following:

1. Testing and/or Sampling Errors

   a. Any sampling procedure that does not conform to test method requirements unless approved by the Department prior to the test.
   b. Isokinetic sampling rate out of range.
   c. Any procedure or piece of equipment that does not conform to the test method requirements.
   d. Samples collected during non-representative process operating conditions.
   e. The zero or upscale calibration value exceeds the sampling system bias specification stated in an instrumental analyzer method.

f. If the measured gas concentration at any time during a test run exceeds the measurement range of the analyzer (i.e., the analyzer is pegged).
g. Excessive post-test leak rate.

2. Major Sample Loss or Alteration

a. Spillage of sample.
b. Filter disruption (holes or tears).
c. Any event or process that causes sample loss.
d. Sample contamination.

3. Analysis Errors

a. Any reagent, procedure, or analysis technique that does not conform to the test method requirements (if not cleared prior to use).

Date: _____ Approved by: _____

Terry L. O'Clair, P.E.
Director
Division of Air Quality

APPENDIX A

Proposed Test Plant Format for Source Testing in North Dakota

North Dakota Department of Health
Proposed Test Plan Format

I. SOURCE INFORMATION

Company Name: _____

Mailing Address: _____

Name/Title of Contact: _____

Address of Contact: _____

Telephone Number of Contact: _____

Permit Number of Source: _____

Location of Source: _____

Initial Startup Date (if source unit is new): _____

Type of Source: _____

Identification of Source Unit to be tested (example Boiler No. 1):
_____

Proposed Test Date:_____

II. TESTING FIRM INFORMATION

Name of Firm: _____

Address: _____

Name/Title of Contact: _____

Telephone Number: _____

III. EMISSION TEST INFORMATION

List all pollutants to be sampled.

	Pollutant	EPA Test Methods to be Used	Number of Test Runs	Number of Sampling Points	Total Time per Test Run
1					
2					
3					
4					

Include information on the sampling train, laboratory analysis, process operation, safety considerations, and examples of the data sheets that will be used.

IV. STACK INFORMATION:

Stack or Duct Dimension(s) at Testing Location:_____

Estimated Stack Temperature:_____

Moisture Content:_____

Attach a sketch of the stack or duct showing port locations relative to upstream and downstream flow disturbances.

V. PROPOSED SOURCE OPERATIONS DURING THE TEST:

Operating Rate: _____ % of Capacity: _____

Person Responsible for Collecting Process and Control Equipment Data During Actual Testing:_____

VI. COMMENTS:

Notes:

Each source unit to be tested must be addressed in the test plan. A complete Proposed Test Plan must be submitted to the Department for every source test at least thirty (30) calendar days prior to the test unless otherwise specified by the Department or by rule.

Testing must be conducted in accordance with the North Dakota Department of Health Emission Testing Guideline, and any applicable rules and/or source permit condition. Specific requirements are included for testing procedures, source operations during testing, and notification to the Department. Failure to follow these requirements may result in testing which is not accepted by the Department.

Submit the test plan to:
North Dakota Department of Health
Division of Air Quality
918 E Divide Avenue, 2nd Floor
Bismarck, ND 58501-1947
Phone: (701)328-5188
Fax: (701)328-5185

APPENDIX B
Emission Test Report

A. **Cover** - Should indicate the name and location of the facility, the specific source unit tested (including serial number when applicable), the name and address of the testing firm (or agency), and the date of the test.

B. **Certification** - A page including a certification by the test team leader who is responsible for the test data, and one by the reviewer of the report (normally the supervisor of the team leader) attesting to the authenticity and accuracy of the report.

C. **Table of Contents** - Self explanatory

D. **Introduction** - Pertinent background information should be presented in this section. This information shall include, but not be limited to the following:

1. Name, address (location), and owner of facility,
2. Test purpose,
3. Name and address of testing organization,
4. Test dates,
5. Pollutants tested,
6. Names of persons present for tests (industry and agency), and
7. Any other important background information.

E. **Summary of Test Results** - This section should include, but not be limited to, the following:

1. The emissions results in the same units as any applicable emission limitation.
2. Allowable emissions.
3. A summary of key parameters such as date/time of test runs, stack gas velocity and flow rate, stack temperature, moisture content, $CO/O_2/CO_2$ gas composition. (Isokinetic variation, pollutant gas concentration, and particulate concentration should also be included when applicable).
4. A description of the collected samples; and
5. Discussion of any errors in the testing.

F. **Source Operation During Testing** - This section should contain a description of the source, including, but not limited to the following:

1. General description of the source, including air pollution control equipment.

2. Process and control equipment flow diagram; and

3. A presentation of the operations and process data and a determination of whether these conditions were representative of those required for testing; and
4. Any changes in operating conditions from those previously agreed upon by the source and agency.

G. **Sampling and Analytical Procedures** - A description of the sampling and analytical methods should be presented in this section. The information shall include, but not be limited to the following:

1. A description of the sampling location(s) and sampling points.
2. Schematic drawings of the facility showing sampling location(s), major and minor flow disturbances, and stack or duct cross section(s) with the dimensions indicated.
3. A description of the sampling equipment.
4. Schematic drawings of the sampling trains (may be included in the Appendix).
5. A description of the sampling procedures and run times, with a discussion of any deviations* from the standard test methods and a justification of the deviations.
6. A brief description of the analytical procedures, with a discussion of deviations* from the standard methods.
7. A description of the methods employed for other types of sampling and analyses, such as fuel.

*** Even the smallest deviations from the Reference Method procedures must be explained fully (i.e., failure to maintain required temperature, improper calibration gas, different dilution, etc.). The explanation must include an analysis about how the deviation may have affected the test result(s).**

H. **Quality Assurance**

1. Equipment calibration data sheets for dry gas meters, pitot tubes, nozzles and magnahelic gauges, etc.
2. Calibration gas certification data sheets (if applicable).
3. Impinger solution blanks (if required).
4. Acetone and water residue blanks (if required).
5. Instrument linearity data.
6. NO analyzer (NO_2 to NO) convertor performance test.
7. Instrument calibration error results.
8. Sample system bias, response time and leak check test results.
9. Results of EPA Quality Assurance Audit samples (if applicable).

I. **Laboratory Reports** (if applicable)

1. Photocopies of original data sheets.
2. Chain of custody data sheets.
3. Analytical methods description.
4. Lab QA/QC (including impinger, acetone and water residue blanks); and
5. Laboratory statement of qualifications.

J. **Methods and Calculations**

1. Equations used should match those in the applicable test method.
2. A complete set of step-by-step example calculations for at least one test run.
3. Include a detailed description of any deviations from applicable calculations or test methods.

K. **Appendix**

1. A summary of all data used in the calculations.
2. Copies of all raw field data sheets. Data sheets must be legible to allow for complete test review.
3. Production and/or operational data, signed by a plant official if provided by the source.
4. Any chain-of-custody procedures utilized and chain-of-custody forms.
5. Any other information necessary to assist the agency in making a determination of compliance.